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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,121	06/27/2003	Setsuyuki Takeuchi	AK-T-420XX	6700

207 7590 02/10/2006

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TEN POST OFFICE SQUARE
BOSTON, MA 02109

EXAMINER

EWALD, MARIA VERONICA

ART UNIT	PAPER NUMBER
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1722

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,121

Applicant(s)

TAKEUCHI ET AL.

Examiner

Maria Veronica D. Ewald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Gellert (U.S. 4,043,740). Gellert teaches a cavity mold, which has a gate of a sprue of a cavity in a concave formed in a bottom thereof (item 58 – figure 3; column 2, lines 60 – 61), a peripheral portion of the gate being formed into a flat face (item 58 – figure 3); and a hot-runner mold which is provided with a needle-valve-nozzle having an end face formed into a flat face, the hot-runner mold being arranged on the cavity mold with the end of the needle-valve-nozzle inserted into the concave (column 2, lines 55 – 56), wherein the nozzle includes a nozzle body having an opening formed in the end face of the nozzle; and a short cylindrical tip that is formed of metal having a lower thermal conductivity than the nozzle body (item 60 – figure 3; column 3, lines 48 – 50, 67 – 68) and has a flat end face and a nozzle orifice in the center of the end face (figure 3), the tip having an inner peripheral wall face extending to the nozzle orifice, the inner peripheral wall face being formed in a conical face having the same angle as the conical end portion of a needle mounted in the needle-valve-nozzle and being fitted on the end portion of the needle to close the nozzle orifice and to support the tip (figure 3; column

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4, lines 17 – 25), the tip being slidably fitted in the opening formed in the end face of the nozzle in such a way that the end face of the tip is protruded from the end face of the nozzle and directly-nozzle-touched the gate of the sprue of the cavity (figure 3; column 3, lines 1 – 5, 10 – 15, 30 – 35).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gellert in view of Hume, et al. (U.S. 5,492,467). Gellert teaches the characteristics previously described but do not teach that the nozzle body is made of steel. Gellert, however, does teach that the nozzle body is formed of beryllium copper alloy, while the nozzle seal is formed of titanium alloy (column 3, lines 48 – 50, 67 – 68), of which the beryllium copper alloy has a greater thermal conductivity than the titanium alloy.

Hume, et al. teach an injection molding system, which includes an article formation cavity and a melt transport mechanism. In the referenced molding system, the article formation cavity is curved and at its outer edge is bordered by a gate which opens and closes to allow or deter the movement of the melt material from the injection mechanism to the cavity itself (column 9, lines 55 – 56, item 16 – figure 1, item 66 – figure 3A). Furthermore, the melt transport means is comprised of a main nozzle body,

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formed of steel, that is substantially cylindrical (column 10, lines 5 – 6) and a bushing tip formed of stainless steel, steel or titanium, depending on the heat characteristics desired (column 10, lines 10 – 15). This reads on the applicant's claim that the nozzle body be made of steel, such that its thermal conductivity is higher than titanium alloy, of which the use of titanium minimizes heat transfer to the mold, thereby deterring any heat from upsetting the mold as it cools (column 10, lines 12 – 15).

It would have been obvious at the time of the Applicant's invention to one of ordinary skill in the art to modify the nozzle body of Gellert to be made of steel instead of beryllium copper alloy for the purpose of maintaining a higher thermal conductivity than the nozzle tip, such that the resin within the nozzle body remains in a melted state while at the same time, once the resin is injected into the mold, the lower thermal conductivity of the titanium alloy nozzle seal inhibits the transfer of heat to the mold, thereby ensuring the plastic cools adequately in the mold prior to being ejected or released.

Response to Arguments

15. Applicant's arguments with respect to claims 1, 3 and 4, have been considered but are moot in view of the new ground(s) of rejection. Applicant has argued that the original combination of references (Hume, et al., Swenson, et al., Kofsman, et al. and Ciccone) fail to show that a needle is employed in any of these apparatus. Examiner agrees and has cited new art. Specifically, Examiner cites the reference of Gellert (U.S. 4,043,740), which shows a nozzle seal or tip seated on the lower portion of a nozzle

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body. Furthermore, the injection apparatus has an elongated, conically-tapering valve pin (item 36 – figure 3) which is vertically reciprocated by a piston-operated rocker arm (column 2, lines 45 – 48). The nozzle seal of Gellert has an inner tapered lower portion, mirroring the tapering portion of the needle. This tapered portion of the insert has the advantages of providing additional heat transfer to the gate area, extends closer to the gate, and avoids a substantial “dead spot” for the accumulation of molten plastic material adjacent the gate (column 4, lines 20 – 25). Furthermore, the nozzle seal slidably fits into an annular seat (column 3, lines 5 – 6). This nozzle seal configuration allows lateral movement of the seal, in operation, such that it moves downward and seats itself over the gate and securely against the face of the annular seat to prevent any leakage of melt (column 3, lines 20 – 25, 32 – 35). In addition, though Gellert does not show a main nozzle body constructed of steel, the reference does show that the nozzle body and seal are made of dissimilar metals. To address the dependent claims 3 and 4, the reference of Hume, et al., however, has again been cited to show a nozzle body made of steel and a nozzle tip or insert made of titanium.

Conclusion

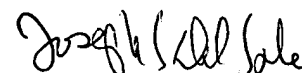
16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maria Veronica D. Ewald whose telephone number is 571-272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MVE


JOSEPH S. DEL SOLE
PRIMARY EXAMINER
2/6/06